From the **KANCELARIA PATENTOWA**
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To:

INTERNATIONAL SEARCHING AUTHORITY
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1. International application No **PCT/PL2004/000089**
2. Applicant: **WESOŁOWSKA, Małgorzata**
3. Title: **FASTENING PIN**

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With reference to the letter of 011/02/2005, I am sending: description of the invention, claims and abstract, which are to be substituted for the previous texts of description, claims and abstract.

In claim 1, the preamble has been extended and the range of demanded protection has been reduced. In the original application, in claim 1, the expression "is equipped with flexible protrusions /2/, preferably in the shape of convergent geometrical figures, placed around the core, while the external dimension of the protrusions /2/ is bigger than the dimension of the hole", has been replaced with the text "protrusions (2) have the form of radially disposed, preferably tapered, geometrical solids, located around the core, with axes of symmetry of the protrusions located within the planes of symmetry of the pin". The feature claimed in the original application "the external dimension of the protrusions /2/ is bigger than the dimension of the hole" has been moved to the preamble and in this version it is not subject to protection. Making the claim more precise by adding this feature: "radially disposed" protrusions of axes of symmetry within planes of symmetry of the pin is justified in the presented embodiments shown in Fig. 1-3 and Fig. 17-20.

The original feature "external dimension of the protrusions is bigger than the dimension of the hole" has been moved to the preamble, in the new version: "protrusions whose dimension of

the diameter of a circle circumscribed on the tips of the protrusion is bigger than the dimension of the hole into which it is pressed."

By making the claims more precise, and by reducing the range of demanded protection as phrased in claim 1, the remaining claims meet the requirements concerning the novelty and inventive step.

Please note that the searching report does not refer to claim 21.

I would also like to draw your attention to the following features of the solution presented in application PCT/PL2004/000089:

- **the shape of protrusions resembling thorns whose tips are elastically tiltable off their axes in all directions;**

The protrusions (fins, wings) in the documents indicated by the Office can only tilt along the axis of the pin.

- over the section on which there are protrusions, **the cross section of the core of the pin is uniform** (without slots, channels, narrowings);
- **protrusions /2/,** in the shape of geometric solids, are **situated radially** with respect to the axis of the pin, with axes of symmetry of the protrusions being located within the planes of symmetry of the pin;
- **all the protrusions participate in the fastening (fixing)** of the pin in the aperture in the substrate, and **in order to insert the pin in the hole, the pressure with a thumb or palm only is sufficient, no tools being necessary.**

D1

The embodiment presented in D1 (US 5,800,109) concerns a fastener whose core comprises a longitudinal slot facilitating placement of the fastener in the hole of an object to which another object is fastened. The shaft of the fastener has an untapered section, close to the head, and a tapered section, which tapered section comprises the slot. The fastener has fins of trapezoidal cross-section. As these section "encircle" the core, they have the shape of truncated cones, located co-axially with the core, with the smaller diameter of the truncated cone being the diameter of the core (22) of the fastener (10), and the bigger diameter of the fin being bigger than the diameter of the hole of the connected items. Channels (28) facilitate driving the fastener into the hole of the fastened item.

Fins of the fastener (in the shape of truncated cones) **are arranged co-axially** with the main axis of the entire fastener.

In our solution, **protrusions /2/** in the form of geometric solids **are arranged radially** with regard to the axis of the pin, and **protrusions /2/ of the pin and stabilizing fins /16/ are pressed into the same hole,** made in the substrate (floor, wall).

D2

Document D2 (US 5,306,098) discloses a solution where the fastener is equipped with elastic **wing elements in the form of segmented thin-walled cone**, with four fins located circumferentially every 90° around the shank. Particular pairs of wings are **coaxial with the shank** and are axially offset in respect of each other. The offset of pair of wings reduces the module (scale) of arrangement of pairs of wings along the axis of the fastener.

Ribs (28) which are located near the head stabilise the fastener in the aperture of one of the items fastened together.

The authors of the solution emphasise that **the wing elements in each of the four rows should preferably have identical configuration in the shape of a segment of a thin-walled truncated cone.**

This is a substantially different feature, in connection with "different cross-sections" of particular protrusions, than the feature defined in claim 4 of our application. In this case, it is not the matter of changing cross-section of the tapered geometric solid, e.g. a cone or pyramid, but of different cross-sections of particular (selected, comparable) protrusion – **what it is about is different dimensions of protrusions in the same plane of cross-section.**

In solution D2, in the plane perpendicular to the axis of the pin, the contour of the protrusion – wing (e.g. 32, 34, 36, 38) **widens from the root at the shank towards the top** and, at pressing into the hole, edges of sides of the wings mutually overlap. In our solution, particular **protrusions are tapered from the root towards the top, and these protrusion, at driving into the hole, will not touch or overlap each other. This facilitates driving the pin into the hole.**

D3

The criticism about lack of novelty of features defined in claims 5 and 7 of our solution (different heights of protrusions), when confronted with the document D3 (US 4,381,633) is groundless. The dimension of teeth 28 in this solution (D3), in the form of truncated-cone-shaped hulls, **is uniform over the entire length of the fastener** when left free. We are comparing the dimension in cross-section perpendicular to the axis of the fastener. Different

transverse dimension shown in Fig. 11 results from deflection of the teeth upon insertion into the aperture in element (65).

In our solution, heights of protrusions (from the base at the shank to the top) can be varied when left free – the transverse dimension, perpendicular to the axis of the pin.

D4 (US 4, 395,174)

The fastener is equipped with an elastic sleeve (25) which has resilient barb-like steps (29). The steps (29) on the sleeve (25) play the role of abutments pressing down the joined metal sheets (35, 31). They thus convey the axial force, and the surface of resistance is the surface perpendicular to the axis of the fastener (base of the trapezoid) – the protuberances do not co-operate with the walls of the aperture. The barbs (29), having passed through the aperture, expand and secure the panel (31) to the supporting plate.

Likewise, in the alternative solution, the sleeve (49) made of resilient metal has expandable fingers (50) to engage under the edge of the aperture in the roof panel and in the web. Fingers (50) work as axial abutments of the fastener pressing the joined elements to each other.

The fastening is performed by one pair of fingers (50) or barbs (29).

In this solution **there are <u>no flexing neck joints</u>** (claim 10 of our description).

Connecting this solution with claim 8 of our application is groundless. In our solution it is **different material of the core** of the pin and **different material of protrusions <u>in the same pin.</u>** In solution D4, fingers (50) or barbs (29) are of the same material as the base of the protrusions: in the case of barbs (29) it is an elastic sleeve (25), and in the case of resilient fingers (50) it is a metal sleeve (49). Moreover, this fastener consists of many elements. The pin as by our solution is monolithic.

D5

In solution D5 (US 5,907,891) the fastener is designed to join frame construction panels or metal sheets with other elements. **To connect elements, <u>only pairs</u> of wings are used.** Sheet metal is fastened (clamped) in a slot, **on the edge** formed by alternately located wings, e.g. 50 and 52, or 54 and 56. Tops of the wings, after passing (squeezing) through a hole in a panel (sheet) remain free – what has contact with the hole in a panel is edges of wings in the radial plane of a pair of alternate wings. Moreover, the wings emerge from the flat surface of the shank.

The function of securing an element (in the form of a sheet or panel) is performed by edges (not tops) of **an alternately located pair of wings**, on the height of the hole in the sheet.
An analysis of the construction shows that it is not possible to use this solution to secure the pin in a cylinder-shaped hole.

Referring to the above presented analysis of the documents indicated by the Office, and upon introduction of the amendment in claim 1, the Applicant believes that in the new version of description and claims (with the range of protection reduced) the solution presented in the application is new and not obvious when compared to the state-of-the-art technology.

Patent Attorney
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Enclosures:

1. Revised description of the invention
2. Revised claims
3. Revised abstract
4. Patent description PL 176358
5. Offenlegungsschrift DE 44 03 131 – priority for the application PL
6. Copy of application for preliminary examination